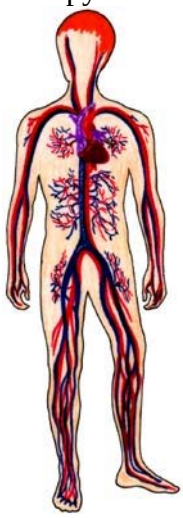
X-Plain™
Radiation Therapy
Reference Summary

Radiation therapy is a very common treatment for a variety of cancers.
Radiation therapy has been proven to be safe. However, it can have certain side effects.
It is important for patients treated with radiation therapy to understand the side effects so they can tolerate and treat them better.
This patient education reference summary reviews what to expect during and after radiation therapy.



Cancer And Its Causes

The body is made up of very small cells.
Normal cells in the body grow and die in a controlled way.
Cancer occurs when cells keep dividing and growing without the normal control.
Cancer cells may also spread to different parts of the body through blood vessels and lymph channels.
Cancer treatments are used to kill or control these abnormally growing cells.

Cancers in the body are given names depending on where the cancer originates.
Cancer that begins in the lung will always be called a lung cancer even if it has spread to another place such as the liver, bone, or brain.
The cause of a cancer in a patient cannot usually be specifically determined.
Each cell contains hereditary or genetic materials called chromosomes. This genetic material controls the growth of the cell.
Cancer always arises due to changes that occur in this genetic material. When the genetic material in a cell becomes abnormal, it loses its ability to control the growth of the cell.
These sudden changes in genetic material can occur for a variety of reasons. They may be inherited from parents. They may also occur due to exposure to specific infections, drugs, tobacco, or other factors.

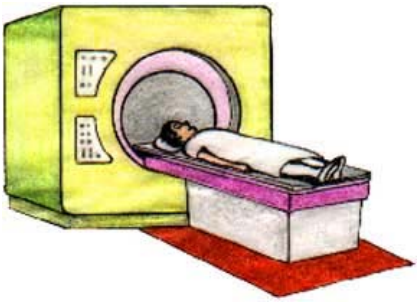
How Does Radiation Therapy Work?

Radiation therapy can be delivered externally or internally.
During external delivery, the radiation is delivered by a machine outside the body. A high-energy beam of X-rays is focused on the area where cancer is present.
During internal delivery of radiation treatments, radioactive chemical seeds are deposited in the area where the cancer is present. This is known as brachytherapy.
The intense energy of the radiation destroys part of the genetic material of cells and stops cell division. This leads to the death of the radiated cells.
Cancer cells are more sensitive to radiation therapy than surrounding normal cells because

cancer cells divide more frequently.
Healthy cells can also be affected, especially rapidly dividing cells of the skin, lining of the stomach, intestines, and bladder.

Treatment Course

Before beginning radiation therapy, your radiation therapy team will plan the treatment first. During the planning visit, a process called simulation will be conducted. During simulation, the target area will be outlined and defined. The surface of the skin, where the beam will enter the body, will be marked. The reference marks are made of ink. They are placed on your skin and lined up with laser lights to position you accurately for treatment. The red laser light is not harmful and is used for positioning.



Next, CAT scans will be obtained for computerized treatment planning to determine the most appropriate way to deliver radiation therapy. This advanced technology allows your doctor to deliver the appropriate radiation dose at the right locations. This in turn limits radiation of normal tissue and reduces early and late side effects.
During radiation therapy, the patient or the treatment area must be immobilized so that each radiation treatment targets the same area. This also makes it possible to reproduce the radiation in the next therapy sessions. Your doctor may use a body cast to immobilize you in the treatment position. Also, custom-made blocks are made to protect normal areas.
The CAT scans used for planning radiation are performed on a flat tabletop similar to the radiation treatment table. The patient is placed in a specific treatment position.
Your radiation oncologist and the healthcare team will review the results of the computerized treatment planning and determine the most suitable treatment method. Radiation therapy is usually not started during the planning visit.
Radiation therapy is usually delivered daily, Monday through Friday, for approximately 7 to 8 weeks for a curative course, depending on the cancer being treated.
Each visit takes about 20 to 30 minutes. You will meet with your doctor on a regular basis to discuss your progress.
In the radiation therapy room, you may be asked to change into a hospital gown. The therapist will then position you on the treatment table.
The therapist will leave the room and start the radiation treatments. You should lie still and breathe naturally. You will hear mechanical sounds coming from the machine.
When a treatment ends, the therapist will help you off the table.
After you have completed all planned radiation treatments, your radiation oncologist will monitor your progress by scheduling follow-up visits.

Side Effects Of Radiation Therapy

The side effects discussed in this summary are general; they may not apply to certain cancers. Additional side effects, not mentioned here, are also possible.
Radiation therapy can cause tiredness; it may be helpful to decrease your work schedule during the treatment.
Nausea and vomiting are also possible. Medications are available to decrease these symptoms.
Radiation therapy can cause hair loss of the affected area; this hair loss can be permanent.
The skin in the target area can become irritated, dry, and discolored. Lotions are available to help decrease this irritation.
Wearing loose clothing can also help decrease the irritation of the targeted area.

When the radiation therapy involves areas near the intestines or bladder, diarrhea, urinary frequency, and blood in the stools or urine may occur. These symptoms improve with time. If they are severe, medical attention may be required to alleviate them.

Nerves close to the target area may be affected resulting in decreased sensation and possible weakness. For example, irradiation of the breast can result in injury to the nerves going to the arm.

High dose radiation to the entire brain can cause a decline in mental capabilities

Dental consultation and major dental work should be done before starting radiation therapy that could target the mouth.

Radiation therapy can also increase the chances of infertility. Patients contemplating having children should undergo family planning counseling. Sperm banking may be necessary in some cases.

It is crucial for women of childbearing age to use adequate contraception during radiation therapy.

Radiation therapy can be very harmful to an embryo or a fetus.

Summary

Radiation therapy is often necessary to fight cancer.

Radiation therapy can be delivered externally or internally.

Even though it is relatively safe, some side effects may occur. Understanding these side effects prepares the patient to deal with them more effectively.